

WHAT IS CLAIMED IS:

1. An obstacle detection system mounted on an automotive vehicle, the obstacle detection system comprising:

a radar sensor for detecting a distance from a vehicle to an obstacle located ahead of the vehicle and its angular direction relative to a traveling direction of the vehicle by emitting radar beams and receiving reflected beams from the obstacle;

means for grouping the reflected beams that are recognized as a plurality of reflecting dots representing the obstacle and satisfy predetermined grouping conditions into a target model;

means for detecting the obstacle based on the target model;

a speed sensor for detecting a traveling speed of the vehicle; and

means for calculating a radius of a curved road on which the vehicle is traveling, wherein:

the grouping means sets a reference distance according to the detected traveling speed of the vehicle and calculates a reference angle made between a reference angular direction connecting a point set on the curved road, the point being apart from the vehicle by the reference distance, and the traveling direction of the vehicle; and

the target model is formed with respect to the reference angular direction by grouping the reflecting dots representing the obstacle.

2. The obstacle detection system as in claim 1, wherein:

the reference distance is set longer as the traveling speed of the vehicle becomes higher.

3. The obstacle detection system as in claim 2, wherein:

the target model is formed by grouping the predetermined number of reflecting dots, starting from a reflecting dot that is closest to the reference angular direction.

4. The obstacle detection system as in claim 3, wherein:

the target model is formed by selecting the reflecting dots sequentially in order of its distance to the reference angular direction until the number of the reflecting dots selected reaches the predetermined number.

5. The obstacle detection system as in claim 3, wherein:

the reflecting dot located at one side of and closest to the reference angular direction is first grouped

into the target model as a first reflecting dot, and then the reflecting dot located at the other side of and closet to the reference angular direction is grouped into the target model as a second reflecting dot; and

a third reflecting dot to be grouped is selected from the reflecting dots located at one side of the reference angular direction where either the first or the second reflecting dot whichever is positioned closer to the reference angular direction is located, and the same process is repeated until the predetermined number of reflecting dots is all selected.

6. An obstacle detection system mounted on an automotive vehicle, the obstacle detection system comprising:

a radar sensor for detecting a distance from a vehicle to an obstacle located ahead of the vehicle and its angular direction relative to a traveling direction of the vehicle by emitting radar beams at a predetermined frequency, the radar beams scanning a predetermined two dimensional detection area ahead of the vehicle, and by receiving reflected beams from the obstacle;

means for grouping the reflected beams that are recognized as a plurality of reflecting dots representing the obstacle and satisfy predetermined grouping conditions into a target model;

means for detecting the obstacle based on the target model;

means for calculating a radius of a curved road on which the vehicle is traveling, wherein:

the grouping means sets a reference angular direction extending from the vehicle to the obstacle that is being observed continuously for a predetermined period of time and selects a predetermined number of reflecting dots to be grouped into the target model from the reflecting dots located closer to the reference angular direction, if the calculated radius of the curved road is smaller than a predetermined value.

7. The obstacle detection system as in claim 6, wherein:

the target model is formed by selecting the reflecting dots sequentially in order of its distance to the reference angular direction until the number of the reflecting dots selected reaches the predetermined number.

8. The obstacle detection system as in claim 7, wherein:

the reflecting dot located at one side of and closest to the reference angular direction is first grouped into the target model as a first reflecting dot, and then the reflecting dot located at the other side of and closet

to the reference angular direction is grouped into the target model as a second reflecting dot; and

a third reflecting dot to be grouped is selected from the reflecting dots located at one side of the reference angular direction where either the first or the second reflecting dot whichever is positioned closer to the reference angular direction is located, and the same process is repeated until the predetermined number of reflecting dots is all selected.

9. The obstacle detection system as in claim 6, wherein:

if a plurality of obstacles are observed continuously for the predetermined period of time, the grouping means determines one obstacle which is closest to the vehicle and sets the reference angular direction extending from the vehicle to the closest obstacle.